**After completing the readings and instructional materials for this module, answer the following discussion questions in 1-2 paragraphs. Provide citations for any research conducted to complete this discussion. Justify your answers using examples or outside research to demonstrate critical thinking about the topics**

What do we mean when we say we ‘vectorize’ an operation in R? How do you think you can apply vectorized operations in your R code? Your response should be one paragraph in length.

When we say we ‘vectorize’ an operation in R, this means that the function will operate on all elements of a vector without needing to loop through and act on each element one at a time (R for Novices: Vectorization., n.d.). In other words, we do not need to loop through each element of a vector every time we want to apply a function. I think the best way to describe how I could apply vectorized operations to my R code is through a hypothetical example. Imagine that I have a vector made up of 300 random numbers representing response time in seconds to individual help desk tickets. Now, imagine I develop a histogram in R for an executive who wants to see the distribution of the counts of the various response times (i.e. responded in 90 seconds 30 times, 120 seconds 20 times, etc.). However, this executive wants to see the graph represented in minutes, not seconds. I could easily divide every element in the vector by 60 in order make this conversion without having to loop through each individual value. This is one of many examples where vectorized operations in R could be useful.

Resources

*Vectorization*. R for Novices: Vectorization. (n.d.). https://docs.ycrc.yale.edu/r-novice-gapminder/09-vectorization/